# Step by Step

LEVEL: Grades 4-12
SUBJECTS: Social Studies, Language
Arts, Career Education
SKILLS: Brainstorming, collaborating,
communicating, comprehending,
comperating, describing, developing vocabulary,
discussing, explaining, following directions,
identifying, inferring, listening, listing, reasoning,
reporting, sequencing, writing

#### **MATERIALS**

Butcher paper, scratch paper, or cardboard; transparency pen; art materials; scissors; a variety of magazines; a jar of any kind of berry jelly; transparency of the attached **Production Flow Chart** sheet; and photocopies of the attached

Step Game Pieces and Production Flow Chart sheets. Optional: highway, city, and state maps.

**VOCABULARY** 

agrichemicals, capital, consumer, consumer product, distributor, processor, producer, production, retailer, wholesaler

ler America Federation.

(USDA).

**RELATED LESSONS** 

From Fiber to Fashion Tomatoes to Ketchup, Chickens to Omelettes Nail by Nail, Board by Board

#### SUPPORTING INFORMATION

In the early decades of the United States, farm families were self-sufficient. They supported themselves by raising crops and livestock, making their own clothes, gathering fuel for heating and cooking, and constructing their homes and shelter. Food was primarily grown or raised to feed the family. Science and technology have helped make agriculture more productive since the 1880s. Around 1850, each U.S. farmer produced enough food to feed five people. By 1940, one farmer grew or raised enough food to feed 19 people.

according to the
American Farm Bureau
Federation. In 2000, 943
million acres of land were committed to farming, either as cropland,
grazing land, timberland, or fish farms, as reported by the National Agricultural
Statistics Service (NASS) of the United
States Department of Agriculture

Today, the United States is the most

productive agricultural country in the

world, with a diversity ranging from

orange groves and cotton farms to

cranberry bogs and fish farms. Each U.S.

people - 101 in the United States and 28

in other countries.

The United

States has

7 percent

land area.

of the

world's

but its

of the

food supply.

world's

farmers

produce

16 percent

farmer produces food and fiber for 129

NASS also reports that the United States had fewer than 2.2 million farms in 2000, including more than 165,000 farms operated by women. The average farm size was 434 acres. A farm is defined as any establishment that sells (or could be expected to sell under normal conditions) \$1,000 or more of agricultural products during the year. The farm population of 4.6 million people represents about 1.9 percent of the total population.

#### **BRIEF DESCRIPTION**

Students study the sequence of production to discover the resources required and the variety of careers involved to take a raw food from the farm to the consumer.

#### **OBJECTIVES**

The student will work in a group to:

- determine the sequence of steps involved in transferring a product from the field to the consumer (path of production);
- identify the resources necessary to complete each step;
- design and illustrate a mural about a specific step and the resources it requires; and
- discuss the diversity of occupations involved in the path of production and why they are important to the overall process and the final product.

# ESTIMATED TEACHING TIME

Session One: 30 to 45 minutes.

Sessions Two to Four: 45 to 60 minutes.

Session Five: 30 to 45 minutes.

Today, most Americans do not grow or raise their own food. There are now several steps and numerous people and careers involved in the production process of getting the food from the field to the consumer. In general, the production process involves three primary groupings: raw-goods producer, the middleman, and the consumer. Numerous people are involved with the work in each of these primary groupings. Let's begin with the raw-goods producer and, step-by-step, follow a product from the field to the consumer.

The raw-goods producer is the individual or firm that produces raw materials such as farm products (crops, livestock), forestry products (lumber), mining products (metals), and so on. The farmer or rancher, a raw-goods producer, is also known as an agricultural producer. The agricultural producer is involved in the everyday activities of growing a crop or raising livestock. They may employ others to help plant, care for, harvest, and pack the crop or care for the livestock. Agricultural producers may use contractors to hire laborers or to assist with the custom aspects of farming or ranching. Harvest crews are hired each summer and fall from Texas to North Dakota and Montana to combine small grains such as wheat and oats. As the grains ripen in

the summer sun, teams of combines harvest and haul grain from U.S. fields. This custom work maximizes the use of expensive combines, harvests grain in a timely fashion, and saves the producer the cost and upkeep on the equipment. Agricultural producers may sell their raw goods directly to the consumer; a prime example is farmer's selling their products from roadside stands. Or, they may sell large quantities of the goods to a middleman.

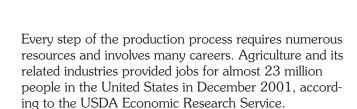
Middlemen consist of processors, distributors and retailers/marketers. The processor (sometimes called processor-packager) changes or processes the raw goods, creating a new product that is packaged and readied for sale to retailers. Examples include cotton to clothing, oranges to orange juice, fruit berries to jelly, wheat to bread, and so on. If the processor does not sell the packaged good directly to the retailers, they will have a distributor pick up large quantities of the packaged product for delivery to retail stores. Distributors may also store goods in a warehouse for later delivery to the retailer. Processors and distributors are called wholesalers when they sell large quantities of goods to retailers.

Retailers, as middlemen, sell directly to consumers. They are the last link from the raw-goods producer to the consumer. Retailers are part of the marketing system. Retailers may buy in large quantities and divide

into smaller quantities to sell to consumers. They generally stock a variety of goods to provide consumers with choices. Supermarkets are large, retail food stores that account for about 75 percent of all food-store sales in the United States. A retailer does not have to be a store. It could be a restaurant, hospital, cafeteria, or vending machine.

And last, but not least in the chain, is the consumer. That includes you, your family, friends, and anyone who purchases and/or uses the final product.

(Note: The process described above represents one way food is grown, harvested, processed, packaged, and delivered to retail stores for sale to consumers. There can be other variations of the process. A processor may process, package and distribute the final product to retail stores. Sometimes a distributor will buy large amounts of a raw good from the agricultural producer, do little or nothing to the raw good, and sell smaller quantities to retailers. Examples include corn on the cob, whole fruits, nuts or grains sold in bulk, and so on. The agricultural producer and the processor may also warehouse products.)



- More than 2 million people operate or are employed directly in farming.
- About 4 million people produce the machinery and resources used on the farm or process and market what farmers produce.
- About 15.7 million people are employed in wholesale and retail operations to get farm products to the consumer.

Agriculture offers many challenging and fulfilling careers in farming, ranching, and related industries. The wide variety includes farm managers; farm economists; food scientists; seed producers; fertilizer manufacturers; crop consultants; plant and animal scientists; food inspectors; agricultural teachers; agricultural pilots; cooperative extension agents; soil scientists; pesticide product developers; distributors; shipping personnel; storage personnel; marketing specialists; sales people (wholesale and retail); designers and manufacturers of various bottles, cans, bags, and boxes; packing personnel; commodity brokers; bankers; agricultural journalists and photographers; nutritionists; truck drivers; utility personnel; supermarket managers; and many others.

#### **GETTING STARTED**

Gather art materials; butcher paper, scratch paper, or cardboard; and a variety of magazines. Obtain a jar of berry jelly for display. Make a transparency of the **Production Flow Chart** and one photocopy for each student. Make five photocopies of the **Step Game Pieces** sheet, one for each group. Cut the game pieces apart with a paper cutter. For younger students, use scratch paper or cardboard to make a large card for each step identified in bold letters on the **Step Game Pieces** sheet.

**PROCEDURE** 

#### SESSION ONE

1. Introduce the lesson by asking:

 Have you ever thought about where your clothes come from before they get to the department store?

- Have you ever thought about where your food comes from before it gets to the grocery store?

(D)

- Where does it all begin?

- Hold up the jar of berry jelly. Tell students that this
  is an example of a consumer food product,
  something made by a small number of people
  (producers) for use by large numbers of people
  (consumers).
- 3. Divide students into five groups. Tell students the jar of berry jelly is being used as the example to learn about the production process, which is steps

necessary to produce farm products that we use in our homes. Explain that this process has a beginning, a middle, and an end. Each of these stages involve various people and careers and requires specific resources.

- 4. Distribute one set of the **Step Game Pieces** to each group. Group members take turns reading the information about each STEP and then placing them in order to show how the product goes from the producer to the consumer. Younger students may want to start by grouping the stages by beginning (agricultural producer), middle (processor, distributor, and retailer), and end (consumer), and then determine the order within the middle stage.
- 5. When each group is satisfied with the order of their STEPS, distribute the *Production Flow Chart* sheet to individual students. Tell students to transfer their information to the chart, writing the specific STEP (e.g., agricultural producer, processor) above the top of the appropriate box. Use the *Production Flow Chart* transparency to illustrate where to place the STEPS. (Note: see *Possible Sequence* located after the Resources section.) Collect the sets of *Step Game Pieces* for use in Session Two.

6. Working with the entire class, have students give the STEP order one at a time. If students do not agree on the order, ask them to explain any variations. For younger students, as each STEP is called out, have one student come forward and hold that large STEP card. Each subsequent student stands in order with

their large STEP card. Students need to save their **Production Flow Chart** for use in all sessions.

#### **SESSION TWO**

1. In their small groups from Session One, have students brainstorm and describe briefly the

kind of activities involved in each STEP. (If necessary, review the STEPS and their sequence.) Distribute one set of the **Step Game Pieces** to each group. The information and question provided on each STEP card are designed to help students describe some of the activities. Students use their **Production Flow Chart** to write brief descriptions of the activities in the box under each appropriate STEP. Tell students to use pencil or erasable ink, since the descriptions may change. If necessary, use the transparency to show students where to write the descriptions and do the first STEP with them.

(Note: If younger students do not understand what is meant by an activity, ask them to think about what they do to get ready for school. Getting dressed, eating breakfast, washing their face, and brushing their teeth are examples of activities. Now get them to think about what an agricultural producer - or farmer - must do to grow berries. Once they are able to identify things such as planting, watering, weeding, controlling pests, explain that these are all activities.)

- 2. Once all the groups have completed their descriptions of the activities, jigsaw the groups to create five new groups. (Take one student from each small group to form new groups. By rotating the students, each brings different information to the new group.) Assign each group one of the five STEPS and tell them they will become the "experts" for that STEP. Students draw on discussions and the brief description of each activity from their previous groups to:
  - write a precise description of the activity for their STEP; and
  - brainstorm the resources they need to get the berries or the jelly to the next STEP. (This part of the lesson is intended to see what resources students can identify on their own.)
- 3. Once groups have agreed on a precise description of the activity and brainstormed the resources their STEP needs, write the following words in a visible place: advertising, agrichemicals, capital, equipment, labor, land, packaging materials, packing materials, seeds, transportation, and utilities. Explain to students that they will use this list to decide which of these resources their STEP needs. With the class, discuss what each of these resources might include.
  - Advertising: newspapers, magazines, television, radio, and more.
  - Agrichemicals: fertilizers and pesticides.
  - Capital: all the tools, machinery, and buildings (e.g., factories, loading docks) used to produce goods and services.
  - Equipment: machinery used on the farm and ranch and in processing plants, office equipment, printing presses, and more.
  - Labor: services performed for wages, barter, room and board, self-sustenance, volunteer work, and more.

- Land: fertile soil used to grow the crop, grazing area, the surface the buildings sit on, and roadways.
- Packaging materials: paper, plastic, glass jars, cardboard boxes, and more.
- Packing materials: cardboard boxes, wood crates, foam "peanuts," industrial popcorn, shredded paper, and more.
- Transportation: animals, people, bicycles, motor scooters, buses, trucks, railroad, freighters, barges, ferries, airplanes, and more.
- Utilities: water, oil, gas, electricity, solar energy, wind energy, and thermal energy.

Tell students to use this list to add or subtract resources for their STEP. Once groups finalize their list of resources required for their STEP, each group member writes the resources on their **Production Flow Chart**.

#### SESSION THREE

Have groups gather materials to create a drawing or mural illustrating the resources needed for their STEP. The mural also must include the activity description for their STEP. Have groups plan a preliminary design for their mural and tell them each group will present their mural to the rest of the class. Give groups time to complete their murals.

#### SESSION FOUR

1. Each group presents its mural to the other groups in the class in order of the STEPS. With each presentation, the other groups in the class modify their activity descriptions and complete the resources on their **Production Flow Chart** for each STEP. At the end of each presentation, encourage students to ask questions about items they do not understand or find particularly interesting.



- 2. Summarize the session by asking:
  - What was easy about identifying the STEPS necessary to make berry jelly available to consumers? Why? What was difficult? Why?
  - Why do you think this sequence is set up the way it is? (Accept any answer that indicates it works.)
  - What do you think makes this process work?
     (Accept any answer that indicates the resources are available.) What might keep it from working?
     (Weather, natural disasters, work strikes, and more.)
  - What could happen if part of the system did not work?
  - Do you think this process is the same all over the world? Why or why not?
  - What might be some of the advantages and disadvantages of this same process throughout the world?
  - Does every consumer product require all of the STEPS identified in the **Production Flow Chart**? (no) Can you give examples of where fewer STEPS might be involved? Possible answers include:
    - (- Consumers may buy directly from producers at farmers' markets or farm stands.
    - Sometimes "homemade" goods are sold at harvest festivals, county fairs, or community events.
    - Food may be purchased in bulk from cooperatives and from some large grocery stores, reducing packaging.
    - Some foods, such as eggs and raw fruits and vegetables require little processing.
    - Processing milk or eggs might involve less emphasis on advertising and/or shorter distances for transport.)
    - How do the resources help get products from the field to the consumer? (Accept any reasonable answer that fits the STEPS.) What if there were not as many resources to help get products from the field to the consumer (e.g., roads, railroads, equipment, agrichemicals, utilities, packaging, and so on)?

#### SESSION FIVE

- 1. Have students get into their mural groups and brainstorm all the careers involved with their STEP (e.g., truck drivers, bankers, pesticide applicator, and so on. See Supporting Information.) Each group writes its list on its mural and shares it with the class. Discuss the similarities and differences among the careers and the importance of each career to all the STEPS. **Optional**: If time allows, have students create another mural of all the careers.
- 2. Summarize the lesson by asking:
  - What new careers did you learn about?
  - Which of these agricultural careers do you find interesting? Why?
  - What is one thing you have learned that will help you in the future?

#### **EVALUATION OPTIONS**

- Evaluate students' **Production Flow Chart** for completeness and understanding.
- 2. Have students complete one or more of the following.
  - I think the most important part of the food production process is \_\_\_\_\_\_ because...
  - I am glad we have this food production process in the United States because...
- 3. Have students create a chart similar to the following:

#### Potato to Potato Chip Production Path

	Steps	Resources	Jobs
1st		1.	1.
		2.	2.
2nd		1.	1.
		2.	2.
3rd		1.	1.
		2.	2.
4th		1.	1.
		2.	2.
5th		1.	1.
		2.	2.

Students complete the chart by writing in order the titles of the STEPS needed to get from a potato to potato chips using these titles: consumer, distributor, processor, producer, and retailer. Have students identify in the chart at least two resources for each STEP and name at least two jobs that are part of each STEP. Have each student write a descriptive paragraph about job opportunities in agriculture in addition to that of a farmer or rancher.

- 4. Write the titles of various careers involved in food production randomly. Give a verbal description of a career and have students identify it.
- Evaluate each group's description of its STEP and have the group explain its place in the path of production.

#### **EXTENSIONS AND VARIATIONS**

- Have students use highway, city, and state maps to identify specific roadways, waterways, railroads, airports, and other modes that might be used to deliver food to your area. Select some of the students' favorite foods and trace a path each of these foods might travel to get to your community. How might grapes from Chile or chocolates from Switzerland get to your town? Call local wholesalers and retailers to learn more. (See the FLP lesson "Loco for Cocoa.")
- 2. Students work in pairs and select a different food product to sequence through the **Production Flow Chart**. Examples of consumer food products include potato chips, applesauce, frozen green beans, baby carrots, canned peas, peanut butter, bread, yogurt, milk, cheese, apples, and oranges. Have the class arrange its selected food products in order of their need for processing. Which is the most highly processed? Which is the least processed? For example, the foods mentioned are ranked from lowest processing to highest processing in this order:
  - apples, oranges
  - milk
  - cheese, yogurt
  - frozen green beans, baby carrots, canned peas
  - peanut butter
  - apple sauce
  - bread
  - potato chips
- Explain to students that berry jelly is not always a consumer product. Sometimes people produce berry jelly at home. Have students contrast the number of steps and people involved in preparing and preserving food for home consumption versus

- production for retail sales to consumers. (Home gardeners might raise grapes, raspberries or strawberries in their own garden. They also could process the berries in their own kitchen and preserve them for later use by canning or freezing. In this example, all the production and processing is done by individuals for their family.)
- 4. Have students write and produce television or radio advertisements for chosen food products. They can write jingles, make up dramatic skits, and more, but should limit their productions to the one-minute or 30-second time slots usually allotted for commercials.
- 5. Have students write a business letter to a commodity association requesting information describing the steps necessary to bring its commodities to market. Possible associations include the National Cattlemen's Beef Association or the United Egg Producers (see Resources located in the Appendixes for addresses).
- Have students interview a local farmer about the path of production involved in producing his or her consumer product.
- 7. Tour an agricultural operation, food-processing plant, warehouse, or grocery store with students. Have students make a list of all the jobs they see during the tour. Divide the class into groups of three or four students. Each group selects a career to research, prepares a two-page written report, and makes a presentation to the class. Encourage students to be creative in their oral presentation, including guest speakers, videotapes, and so on. The two-page reports can be used to compile an agricultural-career notebook.
- 8. Tour the produce section of a grocery store and have students list the produce items available there. Look or ask for the countries or state of origin of each product. Which has come the farthest? Which is produced closest to home? Does the grocery store carry any organic produce? (Most people believe organic farming means not using any chemicals. Organic farming permits the use of naturally derived pesticides and prohibits the use of synthetic pesticides.)
- Explore the issue of packaging, including the effect packaging has had on the environment. See the FLP lesson "Trash Bashing."
- 10. Follow the path of fiber production in the FLP lesson "From Fiber to Fashion. Students can build connections between raw and processed food items

in the FLP lesson "Tomatoes to Ketchup, Chickens to Omelettes."

#### **CREDITS**

Agriculture Backgrounder. Ag Day. Agriculture Council of America. 2002.

http://www.agday.rog/media/media-background.html

Farm and Farm-Related Employment Download Data. Economic Research Service, United States Department of Agriculture. December 2001. http://www.ers.usda.gov/DataFarmlandRelatedEmployment/Page2.htm

Farm Facts. American Farm Bureau Federation. 225 Touhy Avenue, Park Ridge, IL 60068. (847) 685-8864. http://ageducate.org

General Information and Frequently Asked Questions. 1997 Census of Agriculture. National Agricultural Statistics Service, United States Department of Agriculture. 1997. http://www.nass.usda.gov/census/census97/cenfaqs.htm

2000-2001 Statistical Highlights of U. S. Agriculture. National Agricultural Statistics Service, United States Department of Agriculture. 2002. http://www.usda.gov/nass/pubs

#### **ADDITIONAL RESOURCES**

Aliki. *Milk: From Cow to Carton*. HarperCollins Juvenile Books. 1992. ISBN: 0064451119.

Census of Agriculture, 1997. National Agricultural Statistics Service, United States Department of Agriculture. 1997. http://www.nass.usda.gov/census

Chessen, Betsey and Pamela Chanko. *Orange Juice*. Scholastic. 1998. ISBN: 0590149997.

Drake, Jane. Farming. Kids Can Press. 1998. ISBN: 1550744518.

Drake, Jane. Fishing. Kids Can Press. 1999. ISBN: 1550744577.

Economic Research Service, United States Department of Agriculture. December 2001. http://www.ers.usda.gov

Erlbach, Arlene. *Peanut Butter: How It's Made.* Lerner Publications. 1994. ISBN: 0822523876.

Farm Facts. American Farm Bureau Federation. 225 Touhy Avenue, Park Ridge, IL 60068. (847) 685-8864. http://ageducate.org

Flanagan, Alice. A Busy Day at Mr. Kang's Grocery Store. Children's Press. 1999. ISBN: 051620047X.

Flanagan, Alice. A Visit to the Gravensen's Farm. Children's Press. 1999. ISBN: 0516264087.

Flanagan, Alice. Raising Cows on the Koebels' Farm. Children's Press. 1999. ISBN: 0516264702.

Fowler, Allan. *Thanks to Cows.* Children's Press. 1992. ISBN: 0516049240.

Gibbons, Gail. Farming. Holiday House. 1990. ISBN: 0823407977.

Hughes, Meredith Sayles. *Spill the Beans and Pass the Peanuts: Legumes.* Lerner Publications. 1994. ISBN: 0822528347.

Knight, Bertram T. From Cow to Ice Cream. Children's Press. 1997. ISBN: 0516260669.

Landau, Elaine. *Apples*. Children's Press. 1999. ISBN: 0516210246.

Landau, Elaine. Sugar. Children's Press. 1999. ISBN: 0516267728.

Metzler, Milton. Food: How We Hunt and Gather It, How We Grow and Eat It, How We Buy and Sell It, How We Preserve and Waste It and How Some Have Too Much and Others Have Too Little. Millbrook Press. 1998. ISBN: 0761303545.

Peterson, Chris. Extra Cheese Please! Boyds Mills Press. 1994. ISBN: 1563971771.

Pluckrose, Henry Arthur. *In the Supermarket*. Franklin Watts. 1999. ISBN: 0531144984.

Reid, Mary Ebeltoft. Let's Find Out About Ice Cream. Scholastic Trade. 1997. ISBN: 0590738003.

Russel, Ching Yeung. *A Day on a Shrimp Boat*. Sandlapper Publishing Company. 1993. ISBN: 0878441204.

Statistical Highlights of U. S. Agriculture, 2000-2001. National Agricultural Statistics Service, United States Department of Agriculture. 2002. http://www.usda.gov/nass/pubs

Williams, Rozanne Lanczak. *Oranges for Orange Juice*. Creative Teaching Press, Inc. 1996. ISBN: 1574711318.

#### **WEB SITES**

Agriculture Council of America. 2002. http://www.agday.rog/media/media-background.html

Economic Research Service, United States Department of Agriculture. December 2001. http://www.ers.usda.gov

Farm Facts. American Farm Bureau Federation. 225 Touhy Avenue, Park Ridge, IL 60068. (847) 685-8864. http://ageducate.org

1997 Census of Agriculture. National Agricultural Statistics Service, United States Department of Agriculture. 1997. http://www.nass.usda.gov/census

2000-2001 Statistical Highlights of US Agriculture. National Agricultural Statistics Service, United States Department of Agriculture. 2002.

http://www.usda.gov/nass/pubs

#### **EDUCATOR'S NOTES**

## **POSSIBLE SEQUENCE**

#### **STEP:** Agricultural Producer

#### Activity

Plants seeds, protects the crop against weeds and pests, harvests the crop, packages the berries for transporting to a processing plant.

#### Resources

Agrichemicals, capital, equipment, labor, land, packing materials, seeds, transportation, utilities

#### **STEP:** Processor

#### <u>Activity</u>

Washes, cleans, cooks the berries, and adds other ingredients to make jelly, packages the jelly in jars, packs the jars into boxes.

#### Resources

Capital, equipment, land, labor, packaging and packing materials, utilities, (advertising and transportation if they sell directly to retail stores).

#### **STEP:** Distributor

#### Activity

Picks up the boxes of jars of jelly, sells and delivers them to retail stores, and/or stores in a warehouse.

#### Resources

Capital, equipment, labor, land, transportation, utilities

#### STEP: Retailer/Marketer

#### <u>Activity</u>

Sells the jelly to the consumer.

#### Resources

Advertising, capital, equipment, labor, land, utilities, (transportation if they pick up from processor or distributor)

#### STEP: Consumer

#### **Activity**

Buys the jar of jelly for their use or for family; may compare brand names, cost, food-label information, and more.

#### Resources

Land, transportation, utilities



### **STEP GAME PIECES**

(Cut cards apart.)

#### AGRICULTURAL PRODUCER

A farmer or rancher who

- -plants
- -irrigates (if necessary)
- -fertilizes
- -controls pests
- -prunes
- -performs other cultivation jobs
- -cares for livestock.

Why might a farmer or rancher need to hire help?

#### **PROCESSOR**

Makes the berries into jelly, puts the jelly in jars, and packs jars into boxes.

What are some of the things the processor needs to make the berries into jelly and to make the jelly ready for the next step?

#### **DISTRIBUTOR**

Picks up the boxes of jars of jelly, delivers them to retail stores (e.g., grocery stores), or stores boxes in a warehouse.

What kind of equipment does the distributor need?

#### RETAILER/MARKETER

In order to sell the jelly, the retailer and marketing specialists must understand what the consumer wants and needs, including cost and convenience to buy a product. Distributors and retailers use various advertising methods so that the food store or supermarket (retailer) will sell the jelly to people who spread it on toast or bread.

What are some of the expenses retailers would have to operate their store?



#### **CONSUMER**

That is you, the person for whom the jelly was made, the user.

What are some ways the consumer influences the production process?



